p84-0028

university of toronto
computing services

UTCS ComputerNews

CONTENTS

Articles

Let's Talk About It: Local Area Networking 1
New UTCS Board 3
Procedures and Times for Scheduled Downtimes 5
Documentation Update 6
Research Year End 7
Advising Profile 7
1984 DECUS Canada Symposium 8
GALAXY 4.1 Is Coming 9
Recommended Procedure to Follow Failure of an APL Workspace 10
SAS/FSP - Some Application Ideas 11
SAS/OR 12
NAg Mark 10 12
Personals and Mainframes: The FinalWord and SCRIBE 13
COGS and OCP: Concordance Packages 14
Microcomputer News 14
SORT Default Option Changes at UTCS 15
VOLUME Utility Replaced at UTCS 15

Departments

Change Committee 15
Personnel Changes 16
Recent Acquisitions in the Computer Library 16
UTCS Terminal and Advising Sites 18
UTCS Systems 19
Consulting and Enquiries 20
UTCS Directory 20
Committees on Computing 20

ISSN 0315-4661 January/February 1984 No. 212

Publisher

University of Toronto
Computing Services
Toronto, Ontario
Canada M5S 1A1

Editor: Martha Parrott

Publications Assistant: E. Weitmann

Publication Date: February 1, 1984.

Subscriptions

Subscriptions run for one year, beginning each January. Changes should be entered on the tear-out form at the back of this issue, and mailed to *COMPUTERNEWS,* Engineering Annex, Room 206 (or phone 416-978-4990).

COMPUTERNEWS is published 8 times yearly by University of Toronto Computing Services. Enquiries or contributions should be directed to:

The Editor
COMPUTERNEWS
11 King's College Road, Room 207
University of Toronto
Toronto, Ontario
Canada M5S 1A1

Permission is granted to reprint articles from *COMPUTERNEWS* for noncommercial purposes provided the author, publication and issue are acknowledged.

Let's Talk About It: Local Area Networking

Gentle reader, in this article I'm going to discuss our short term directions in computer networking. Last time I indicated Al Heyworth was working on a longer term institutional strategy for telecommunications in general on campus. Undoubtedly this strategy will be one which will require periodic reassessment as technologies evolve, and much of its concrete implementation will probably have to await a resolution of how the University will meet its future telephone needs (obviously potential voice and data communications solutions will become increasingly interrelated, even integrated, in the future). However, there are some short term communications needs that we can address now while not shutting the door on longer term solutions. In fact, some aspects of what we do now will probably survive for quite a while, and I'll dig into these shortly.

Our present mode of general access to our systems is via the PACX (Private Automatic Computer EXchange). This is a switch with a fixed number of specific incoming and outgoing ports. Connections can be initiated only from an incoming port to an outgoing port. Incoming ports are only terminals or facilities seeking connection; outgoing ports are only computers or whatever, i.e. facilities to which connection is made.

Basically, the PACX is full. Terminals from our public sites and private users are hardwired to all but about 50 of the 512 incoming ports, and the 256 ports on the outgoing side are completely utilized. Wiring a private user to the PACX, is relatively straightforward, if a port is available. Finding an outgoing PACX port to connect to a computer requires a conscious shuffling and reallocation. Because the PACX is relatively old and inflexible technology, we don't want to expand it. What we do want is to increase the number of available ports on both sides for additional private users and for additional computer connection. In order to do this, we could expand the PACX or we can connect the terminals in our public sites and the computers in a different way. Since the public site terminals are in clusters and under our control, they are far more amenable to a different mode of connection than private user terminals. We can free both incoming and outgoing PACX ports and then be able to offer potential connections to machines other than our own, and have more terminal ports for private users.

For this fiscal year and into 1984-85, we are going to evaluate and implement local area networking technology for interactive terminals and for CPU - CPU networking. We hope to be able to install interconnected Ethernet local area networks at UTCS sites on the St. George campus and at the suburban campus sites as well. The Ethernet local area network technology was first introduced as a joint standard by Xerox, DEC and Intel.It is relatively mature and well understood, and there are a reasonable number of vendors offering products which implement it. What we do and when is dependent on the availability of the technology, and the funding sources, either from our or other annual plans or from communications savings generated by the new facilities. We have funding to accomplish quite a bit this year, and I'll now dig into exactly what we plan to do spending this year's money.

We provide two major public research terminal sites, at the Engineering Annex and Sidney Smith. We are going to connect 24 terminals at the Annex and 16 at Sidney Smith to an Ethernet local area network via Interlan terminal servers. The terminal servers are really small computers that connect each terminal independently to the network. The Annex and Sidney Smith sites will each be connected to our machine room via concentrators and fibre optic links. At our end, the fibre optic links will join at a passive optical hub, which will

continued...

Let's Talk About It continued

connect via a concentrator to our machine room. There, 3 additional terminal servers will connect to 24 ports spread over the 3033/N12 and the DECsystem-10. This is the first phase terminal network. This network can be the basis for a number of further extensions, which will occur as the technology and appropriate funding are available.

The fibre optic connection will possibly use equipment from CANSTAR. We are considering their participation for the engineering and installation of these links.

One component of a file transfer CPU network would be to connect the two CDF (Computing Disciplines Facility) VAXs at the Annex via their own Ethernet link and then tie them into the Annex Ethernet concentrator. At our machine room, our hub VAX could be similarly connected to the concentrator at the machine room end. This does not allow the public terminals to access either the CDF or hub VAX, but allows these specific computers to transfer files among themselves. At this stage there would really be two parallel networks. The CDF and hub VAX computers share the medium with the terminals, but the terminals can only connect to terminal servers, and via the network, to other terminal servers, hooked to computer ports.

The CDF's connection to the hub VAX is of little use until additional potential connections have been made. First, on each of the suburban campuses the two VAX computers could be connected to each other via Ethernet. Then, from each campus one or the other of the VAXs could be connected to the hub VAX via a standard (non-Ethernet) telecommunications link, for remote job entry and file transfers to and from the IBM 3033/N12 via the hub VAX. Then, on each suburban campus, the Ethernet connection between the VAXs could be extended with terminal servers to connect to the public terminals which presently use dial-up facilities to St. George. This makes sense to do when the technology is finally available to connect these local networks via special concentrators, to a dedicated telecommunications line to another concentrator and then to the downtown network, probably in our machine room.

This potential network has the following characteristics. Terminals access the Ethernet network only via terminal servers, and once connected can access computers initially only through terminal servers connected to computer ports. As technology evolves, the terminal servers at the computer port end may no longer be required and can be used to increase the number of terminals on the network. Terminals hardwired to computers which are connected directly to the network can not "pass through" to the network. They can initiate file transfers.

This all sounds pretty complicated, but it represents what could be done over the next year or so with current and projected technology. What we actually do past this fiscal year's activities depends on how much explicit funding we receive and how much can be made self-financing from savings. In any case, the direction is exciting and the potential results very useful.

Warren Jackson

New UTCS Board

The Vice-President — Research & Government Relations, Professor David Nowlan, has established a UTCS Board and several committees to review and advise on UTCS policy and on general University computing policy, respectively. All the committees report to Professor Nowlan, who also chairs the UTCS Board.

UTCS Board

The board is a continuing body established on the recommendation of the UTCS Review Group. Its role is to advise upon UTCS policies. Policy issues may be identified by the Board, by other committees concerned with computing matters, by UTCS or by others on campus. Normally, the Board expects the UTCS Director and staff to propose policy in the light of these issues; the Board then advises on the disposition of the policy proposals. Some recommendations of the Board may be adopted directly by UTCS; others are forwarded to central administration for action.

The Board is responsible for approving the coming year's annual plan, which is normally brought to the Board by the Director late in each calendar year. Of special immediate concern to the Board is the process by which, in accordance with University policy, computer entitlements are monetized and prices established at UTCS in a new real-dollar computing environment.

Committee on Computing Facilities and Services

The Committee on Computing is an interdivisional committee established to monitor and advise on campus-wide computing development and to review and develop recommendations for general University policy towards computing facilities and services. Networking, telecommunication, data security and confidentiality, the efficient development of divisional computing facilities, the role of UTCS, campus-wide pricing policies and practices and the need for information on computing facilities and services are all areas of concern. Reports, recommendations and decisions from most other computing committees are referred to this Committee for information and, if they affect University policy, for advice.

More specifically the Committee evaluates the development of new dollar-based UTCS prices (recommended by the UTCS Board), particularly in relation to computing prices elsewhere in the University; discusses and advises upon the new computer network standards that will be recommended by the University Telecommunication Coordinator; and advises upon the information that should be collected centrally about campus-wide computing developments.

Committee on Academic Computing

This committee evaluates and advises upon the development of both instructional and research computing throughout the University. It helps to identify needs and recommends efficient ways of meeting these needs. Specialized or separable components of academic computing, such as BICS or CDF, are guided by special committees and do not have the focused attention of this committee, although developments in these areas may bear on its concerns and influence its advice.

The committee advises upon the academic computing components in UTCS' annual plan. It also advises upon desirable developments in divisional (i.e., non-UTCS) academic computing and comments on plans brought forward by divisions for centrally funded divisional computing.

Committee on Computer Networks and Telecommunications

This committee has four major functions. First, it recommends policy and guidelines for establishing a structure which both en-

continued...

New UTCS Board continued

courages independent efforts in telecommunications and networking and identifies communications services which should be overseen by the University. Second, it reviews and advises upon all proposals involving the introduction, expansion or modification of telecommunications or networking services, including proposals which interface with common carrier or government regulated services. Research proposals or systems restricted to a very small community are excluded. Third, it ensures, by review and recommendation, that the funding policies and budgetary mechanism supporting telecommunications and networking services make the best use of limited funds. Finally, it will provide direction for any attempt to establish a communications group responsible for delivering University governed communications services.

The Committee on Administrative Computing and Information Technologies

Terms of Reference are currently under review.

Memberships as of January 1984

UTCS Board

Prof. D.M. Nowlan, Chair
Prof. J.D. Bossons, ex officio, IPA
Prof. J.Z. Buchwald, ex officio, IHPST
Prof. R.A. Collins, Civil Engineering
Prof. P.N. Corey, Preventive Medicine & Biostatistics
Mr. D. Grindal, Graduate Student
Prof. R.C. Holt, CSRG
Prof. T.E. Hull, Computer Science
Prof. J. Hurd, ex officio, Trinity
Dr. W.C. Jackson, ex officio, UTCS
Prof. J.T. Stevenson, Philosophy
Mr. R.G. White, ex officio, Business Affairs
Prof. R.N. Wolff, ex officio, Vice-Provost
Prof. S.S.M. Wong, Physics
Dr. E.V. Swenson, assessor
Mr. A. Heyworth, assessor

Committee on Computing Facilities & Services

Prof. J.D. Bossons, IPA, Chair
Prof. D. Andrews, Medicine
Prof. A. Borodin, Computer Science
Prof. J.J. Fawcett, Erindale & Geology
Mr. A. Heyworth, Telecommunications
Dr. W.C. Jackson, UTCS
Mr. J.D. Kraemer, Medicine
Prof. I. Lancashire, English & Erindale
Dr. D.W. Lang, Planning
Prof. D. McCammond, Applied Science & Engineering
Prof. D.M. Nowlan, Research & Government Relations
Dean K.H. Packer, Library & Information Science
Mr. A.C. Pathy, Business Affairs
Prof. G.P. Richardson, University College
Prof. J.J.B. Smith,Arts & Science & Zoology
Prof. G.F. West,Physics
Prof. R.N. Wolff, Vice-Provost & Management Studies
Dr. E.V. Swenson, Information Systems

Committee on Academic Computing

Prof. J.Z. Buchwald, IHPST, Chair
Prof. V.C. Hamacher, Electrical Engineering
Prof. P.P. Kronberg, Astronomy
Mr. W. McCarty, REED Project
Prof. J.R. Miron, Urban & Community Studies
Mr. J.N.T. Potvin, Medical Computing
Prof. J.A. Sawyer, Management Studies
Mr. A. Heyworth, assessor
Dr. E.V. Swenson, assessor
Dr. W.C. Jackson, assessor
TBA
TBA

continued...

Memberships as of January 1984 continued

Committee on Computer Networks & Telecommunications

Mr. A. Heyworth, Chair
Mr. R.I. Crouse, Physical Plant
Mrs. V. de Bruin, Library
Dr. E. Fillery, Dentistry
Prof. C.C. Gotlieb, Computer Science
Prof. H.N. Janisch, Faculty of Law
Prof. M. Lamb, Library & Information Science
Prof. J.G. Reitz, Sociology
Mr. N. Housley, UTCS
Dr. E.V. Swenson, assessor

Eugene Siciunas

Procedures and Times for Scheduled Downtimes

There are, in general, two classes of events which can lead to the absence of services during normal production hours. The first class includes unexpected failures of major software and hardware components. Such events demand immediate attention by appropriate personnel to restore a system to working condition in as short a time as possible.

The second class of events occurs because of the need to perform hardware preventive maintenance, to test and install new or upgraded hardware and software products, and to repair minor software and hardware problems which do not significantly affect the quality and reliability of production services. These activities, in contrast to the emergency situations mentioned above, permit required system/service outages to be scheduled in advance.

This article briefly describes the guidelines that UTCS enforces to ensure that scheduled outages occur in a controlled manner with a minimum of disruption to our users.

Preemptive Hours

Normally maintenance, testing, and installation activities requiring that a machine or service be put out of production are permitted only during certain hours. The discussion here concerns the following UTCS held computers: IBM 3033/N12, IBM 3033/U16, DECsystem-10, DEC PDP 11/70, DEC VAX 11/750, and GANDALF PACX systems and their peripheral equipment located in the UTCS machine room. The IBM 4341 system providing administrative services has a slightly different set of preemptive hours reflecting the different characteristics of that system.

The hours eligible for preemption are:

Monday through Friday,	06:00 to 08:00
(excluding holidays)	22:00 to 24:00
Saturday and Sunday	00:00 to 10:00
(excluding holidays)	18:00 to 24:00
University-wide holidays	00:00 to 24:00

Priority for the use of the Monday through Friday 06:00 to 08:00 time slot is given to activities which must be performed by our vendors (e.g. CDC, DEC, IBM). Some vendor activities cannot be performed in these hours because of vendor constraints and contract limitations, but these exceptions are few in number and occurrence. The most prominent of these is the preventive maintenance performed on the DECsystem-10 by DEC engineers each Wednesday between 07:00 and 09:00 .

Any requests for time outside of these hours must be reviewed by both the Director and the Operations Manager and will be approved only for situations deemed critical.

continued...

Scheduled Downtimes continued

Procedures

To ensure that necessary outages are scheduled properly and with adequate notice to users, certain procedures must be followed before any request is approved. All UTCS staff members requiring that a machine or service be taken out of production must complete a prescribed form in which the planned activities are described, fallback plans outlined, and the time duration is stated. This form is submitted to the Operations Manager for review.

Requests are discussed and approved or denied at operations review meetings, held each weekday morning, with members from the various UTCS departments present.

A final check-off is done during the operations review meeting immediately preceding the scheduled time slot to ensure that all aspects of the planned work are ready and that valuable time which would otherwise be used in production will be wisely used.

Users are notified in an appropriate manner, usually through posted notices, HOTNEWS, and/or logon messages. For events in the 22:00 to 24:00 time slots, information must be available to the user community before 12:00 noon of the same day. For weekend activities, the deadline is 12:00 noon of the preceding Friday. No advance notification is normally provided when a 06:00 to 08:00 time slot is used.

The daily operations review meetings are also used to analyze the success or failure of activities that have occurred and to suggest alterations which, in the future, would allow us to perform maintenance, installation and testing activities with less impact on the services delivered to our users.

Bob Chambers

Documentation Update

In an academic community, students acquire information in two basic ways. Sometimes, information from scattered sources is pulled together *for* them — in course lectures, for example, and prepared bibliographies. Many times, however, they gather their own information through some kind of research, whether in a library or lab or just by talking to teachers or other students.

At UTCS, the same principle applies. The noncredit short courses provide packages of information on particular topics, while written documentation forms the core of a reference library for students to find out for themselves what they need to know for their own work.

Information in the UTCS GUIDE TO PRODUCTS AND SERVICES is arranged by subject, as in a library subject catalogue. Thus, users may, to some extent, custom design a manual as they did with the old USERBOOK modules. However, when a user group is as large and diverse as UTCS', documentation cannot address any particular audience. Information in GPS therefore ranges from the most introductory to a much more sophisticated level, and individuals must do some sifting on their own to pull together the parts relevant to their needs.

New UTCS Documents in hardcopy

UTCS Catalogue: Access

Previously announced:

The SOS Workbook
UTCS Catalogue: Text Products
UTCS Guide to Mainframe File Transfer Facility
UTCS Guide to XEROX 9700 Printing

continued...

Documentation Update continued

UTCS Guides online

Previously announced:

UTCS Guide to APL (MANUAL=APL)
UTCS Guide to GPJS (MANUAL=GPJS)
UTCS Guide to WYLBUR (MANUAL=WYINTRO)
UTCS Guide to XEROX 9700 Printing
MANUAL=X9700SAM (with font samples, printed on the 9700)
MANUAL=X9700 (without fonts, output from line printer)

This Guide is also available in hardcopy from the Information Office. This is the cheapest way to obtain it.

To print online documents, WYLBUR users type "do document?", TSO users type "help document", APL users type ")LOAD 1 UTCSGUIDE <CR> HELP".

Martha Parrott

Research Year End

Researchers are reminded that the fiscal year end for Federal Research Grants is March 31. Due to the early cut-off date required by the Comptroller's Office for March accounting, the final dates for billing UTCS services to grants for the month of March are:

GPJS, WYLBUR, TSO, APL and DECsystem-10	March 26
PDP 11/70 and Special Services	March 23

Blanket Purchase Orders for these grants will be cancelled on March 27, and any remaining encumbrances will be released to the free balance of the grants.

Researchers whose grants are extending into the next fiscal year and those anticipating new grants should notify the UTCS Accounting Office by forwarding either a copy of a Purchase Requisition or a letter stating that a Purchase Order will be raised and including the amount planned.

Blanket Purchase Orders encumbering Departmental Subsidy funds are valid until the end of April, 1984.

Marg Doherty

Advising Profile

For certain periods of the year, UTCS Advising Services undertakes a user survey. The results are used to plan for future staffing requirements, help decide which technical skills should be stressed when training advisors, determine which UTCS systems/processors are being advised on, and monitor whom we are advising. Here are the highlights of the latest survey, for October 17 - November 30, 1983, with some comparisons to a survey for a similar period in 1982.

The High Speed Job Stream's disappearance in September 1983, combined with the elimination of most UTCS-provided keypunch machines and the corresponding efforts to move people from cards to WYLBUR, resulted in a significant increase in WYLBUR advising: 37% of all inquiries to

continued...

Advising Profile continued

advising concerned WYLBUR, as opposed to only 6% in the 1982 survey. If we restrict our analysis to non-HSJS and non-BICS advising, advising on the GPJS reflected a corresponding decrease from 56% to 32%. TSO advising decreased slightly as well. Advising on other System categories remained fairly consistent with 1982's frequencies.

Advising was spread across the three advising sites: 63% at the Central Advising Office, 17% at the Engineering Annex, and 20% at Arts & Science. Since the AST office is open for twice as many hours as the Annex office, we can say that AST is underutilized. Because of this, efforts have been made to promote the use of AST, and the skill level of advising has been strengthened to encourage users to go there. Since the CAO is phone-in or by appointment only, users may prefer ''instant'' walk-in service at AST.

A ''type of user'' breakdown over all three sites followed a predictable pattern:

Type of User	
Graduate Students	30.9%
Undergraduates	27.9%
U of T Staff	20.9%
Faculty	9.1%
Other	11.2%

An overall reduction in queries from the Department of Computer Science, from 53.0% to 9.6%, is largely attributed to the increased usage of BICS. Because DCS now relies on tutors for BICS, no UTCS advising is required. In the 1982 survey, most advising for DCS was done at AST, and most of that was on HSJS and BICS. If we compare non-HSJS and non-BICS advising only, DCS shows only a moderate 6% decrease.

Continuing with the non-HSJS, non-BICS comparison, we find only small changes in frequency of advising for most disciplines. For example, ''Professions'' increased from under 2% to almost 8%, and ''Psychology'' showed a decrease from about 7% to 3%. But generally speaking, there was a continued trend toward advising service to a wide variety of University departments.

The survey shows that Advising continues to get questions on many different processors, although SAS (11% of questions) and FORTRAN (10%) head the list. These results are useful when setting up training for Advisors. Last term, for example, many Advisors were given extensive readings in SAS. An exam administered to all Advising Services staff stressed fluency in WYLBUR and FORTRAN, while looking for advanced knowledge in SAS.

UTCS thanks those who participated in our survey for their patience and assistance. We realize that the information obtained in any survey is limited and encourage you to make your views known. Please feel free to phone Alex Nishri at 978-7109.

Paul Roth

1984 DECUS Canada Symposium

For the second time in three years the city of Toronto will host the Digital Equipment Computer User Society (DECUS) Symposium. The conference will be held at the Constellation Hotel (near Toronto International Airport) from April 30 through May 3, 1984. Note that this is a change from earlier announcements.

These conferences have become important forums for both Digital Equipment Corporation (DEC) and the many users of Digital's computer systems. They are particularly useful for getting an early look at

continued...

DECUS continued

Digital's future plans. Often there is even an opportunity to have some input to those plans. Also, more than half of the papers at the conference are presented by DEC users. This provides a mechanism whereby attendees can obtain valuable information simply by discussing their problems with other DEC users.

Following recent tradition, the first day (Monday) will be devoted to several day-long, in-depth, specialized seminars. The actual Symposium will take place Tuesday through Thursday and will consist of over a hundred individual sessions arranged in as many as five or six parallel streams.

Topics to be covered include hardware issues related to Large Systems, VAXs, PDP-11s, and Personal Computers as well as the software applicable to operating systems such as TOPS-10/20, VMS, UNIX, RSTS, RSX, and RT. There will also be many sessions devoted to broader issues such as Networks and Office Automation. In short, something for everyone.

Additional information about the 1984 DECUS Symposium can be obtained by calling DECUS Canada at 613-592-5111 (X2782) or writing to:

DECUS Canada
P.O. Box 13000
Kanata, Ontario K2K 2A6

Several members of the University of Toronto computing community are already involved in planning for the conference. Suggestions and offers of help from any quarter will be more than welcome.

Dr. Edmund West

GALAXY 4.1 Is Coming!

The long awaited rewrite of the GALAXY queuing, spooling, and batch processing subsystem for the DECsystem-10 has finally arrived. After extensively testing the product, UTCS has scheduled the installation of version 4.1 for Tuesday, February 14, 1984, at 8:00 a.m.

Users should be warned that several standard procedures will be changed. Those who submit batch jobs to the IBM system will be affected most. Both the syntax of the SUBMIT command and the method of retrieving the IBM output log file are different.

Both ANSI and EBCDIC magnetic tape labels are now supported through the new /LABEL switch in the MOUNT command. For the time being the system will continue to assume that tapes being mounted have no labels. At some time in the future, however, this issue may be reopened. For most users, the old MOUNT command syntax will still work.

The QUEUE command output is somewhat different. DECsystem-10 batch procedures are much the same except for the addition of the /NOTIFY switch and minor changes in the format of the output log file.

Interested users should read the online document DOC:GALAXY.DOC (and the files referenced therein) for additional details of the new GALAXY.

Dr. Edmund West

Recommended Procedure to Follow Failure of an APL Workspace

This article, which appeared in the March/April 1982 issue of COMPUTER-NEWS, has been updated and is reprinted here for the benefit of APL users.

In the event of a serious problem in a large system written in APL the following procedure will minimize time-consuming debugging. This procedure is designed primarily for the case where a large APL package is used by someone other than the original programmer. However, much of it is valid in any error situation.

The following steps are essential when you need to call in the help of your programmer or a Timesharing Advisor.

1. Immediately rename the workspace and save it. The new name must not conflict with the names of workspaces already saved in your library. You should therefore develop a naming convention for crashed workspaces. A reasonable convention might be:

   <WSNAME><DATE>

2. Use nonconflicting variable names to save the values of the system variables ⎕ER, ⎕NAMES, ⎕NUMS, and ⎕SP into variables in the workspace. You might use ∆ERROR, ∆NAMES, ∆NUMS, and ∆SP; they are less likely to cause naming conflicts. Be careful that no information is lost in this step and that ⎕ER and the state indicator are not damaged. When an error does occur, information on that error is stored in the variable ⎕ER. If you make a typing error while saving the system variables, ⎕ER will be rewritten, thereby losing valuable information. In addition, if you run any function in the failed workspace and it fails, the state indicator will have information added to it which will not pertain to the original failure. NEVER type)RESET unless you know you have solved the problem.

3. Rename and save the workspace again, using a new name. The first save is done as a backup in case information is lost during step 2. Both of these saved workspaces must remain intact until the problem has been solved. For example:

```
FILE NAME ERROR
OPEN[10] FLNM ⎕STIE TIENUM←1+⌈/0,⎕NUMS
         ^

      )SAVE FAIL1MONDAY
  16.07.46 08/21/81
      ∆ERROR ← ⎕ER
      ∆NAMES ← ⎕NAMES
      ∆NUMS ← ⎕NUMS
      ∆SP ← ⎕SP
      )SAVE FAIL2MONDAY
  16.09.31 08/21/81
```

4. Make an immediate note of everything you did before the crash. If you phone for help, have this information available along with the two versions of the crashed workspace and the original workspace you loaded.

There are two further suggestions for the APL programmer faced with the problem of fixing a failed APL workspace.

1. Use the functions found in 4 DOCWS and in 1 FILEPRINT to obtain hard-copy listings of both of the failed workspaces saved in the above procedure. Try to have on hand an up to date listing of the original workspace, as listed before the failure. Do not waste your time by attempting to find your way around a badly crashed workspace at your terminal.

continued...

APL continued

2. If the workspace crash involves files, or if you even suspect that it involves files, **do not play around with it.** Everything you do must be completely thought out and double checked as much as possible. Backups of all files must be taken. If you attempt a fast fix without knowing your way around the workspace, you **will** damage files, perhaps irretrievably.

Mary Ann Lawry

SAS/FSP® - Some Application Ideas

Since the most frequent example given to illustrate the use of SAS/FSP is that of a subscription list, it is sometimes difficult for users to imagine how it could help them in their own applications. The following excerpts from papers presented at SUGI Conferences are examples of some of the different areas in which people have already used SAS/FSP with great success:

1. The Department of Experimental Statistics, Louisiana State University has developed a Nutritional Analysis System. The current databank for this system contains nutrient-related information on approximately 2,800 individual and composite foods. FSEDIT is used to update the nutrient information for specific food entries.
2. KLM Royal Dutch Airlines developed a system for maintenance of duty rosters for shift personnel in 1981. FSEDIT is used to look after the personnel file, the roster file (e.g. shift 1, shift 2, etc.), and the mutation file which contains all the changes compared to the standard duty roster (e.g. on leave, swapping shifts, sick).
3. The Virginia Electric and Power Company uses the Spotplus system to simplify the coal procurement process. FSEDIT is used to enter and update coal market data, and reports are produced. Also, models have been developed to aid in deciding which offers of coal should be selected.
4. The Central Advising Office here at UTCS set up an FSEDIT screen to assist a data entry clerk in entering information gathered on the use of UTCS Advising Services (see the article ''Advising Profile'' in this issue).
5. The SAS Institute, of course, uses SAS/FSP quite heavily for inquiry applications, data entry and editing, file retrieval, and letter writing. The Marketing Division uses SAS/FSP for many administrative and record-keeping functions, such as searching the master prospect data base, reviewing the status of new contracts, verifying information on the installation data base, and checking training course registrations.

I hope that these examples will help you to see how SAS/FSP could be of assistance to you in your work. If you are interested in learning more, a free SAS/FSP demonstration is available. To register, call Irene at 978-4565; the seminar will be held when there are enough students. If you would like to discuss how to start using FSP with your application, call the Central Advising Office at 978-HELP and ask for an appointment with a consultant.

Diane Mitchell

® Registered trademark of SAS Institute Inc., Cary, N.C.

SAS/OR®

After months of delay, SAS/OR has finally arrived and is now available to users of the IBM 3033/N12. An article about the procedures in SAS/OR was published in the September 1983 issue of *COMPUTER-NEWS*. The version that we now have available is the beta test version. This means that it is very possible that there are problems with the OR procedures. If you encounter difficulties with PROCs ASSIGN, CPM, LP, NETFLOW, TIMEPLOT or TRANS, please call the Central Advising Office at 978-HELP for assistance. Manuals for SAS/OR can be purchased at the UTCS Information Office.

The next version of SAS/OR will arrive with SAS 82.4. Two of the enhancements included in that version are that PROC CPM will be able to schedule jobs around holidays and to specify hours in a working day.

Diane Mitchell

® Registered trademark of SAS Institute Inc., Cary, N.C.

NAg Mark 10

The new version of the NAg library is now available for testing and will go into production on February 6. Changes from Mark 9 are not very major, since only one routine (C05NAF) has been removed, and replacement routines are available (C05NBF or C05NCF). Twenty-eight routines have been added to six different chapters:

1. C06 - one routine which accelerates the convergence of a given sequence to its limit.
2. D01 - eight routines for the numerical evaluation of definite integrals in one or more dimensions.
3. G01 - one routine which prints a histogram on a character printing device with user control.
4. G05 - five routines for random number generation.
5. G13 - ten routines for time series analysis.
6. S18 - four routines for values of scaled modified Bessel functions.

The name of the NAg library will be APPL.MATH.NAG10LIB` during the test period and APPL.MATH.NAGLIB after February 6. The current release will then be called APPL.MATH.NAG9LIB. The Mark 8 library will be removed from the system in the near future.

Documentation on the NAg routines, can be found in the UTCS Information Office. As well, there is a dataset called APPL.MATH.NAG10DOC which contains two useful members: INDEX provides a concise summary of the Mark 10 routines, and NOTES supplies implementation-dependent details. The most common problem that people have when first using NAg routines is declaring variables incorrectly. We have the double precision version, which means that many variables should be declared DOUBLE PRECISION. NOTES gives the correct interpretation of the italicized terms used in the Library Manual.

If you have any questions or problems with NAg, please call the Central Advising Office at 978-HELP.

Diane Mitchell

Personals and Mainframes: The FinalWord and SCRIBE

UTCS has been evaluating word processing programs that will integrate well with the SCRIBE formatting package. We have found that "The FinalWord" -- marketed by a company called Mark of the Unicorn -- fits well under this criterion. Last year The FinalWord had an excellent review in the publication *PC -- The Independent Guide to IBM Personal Computers.* In this review it was stated that The Final Word's "versatility and flexibility ... cannot be rivaled in today's software market." This review, our experience with the program, plus the experience of other users at the University of Toronto have convinced us that The FinalWord is a fine word processing package in its own right.

The FinalWord is available for several Personal Computers, including the IBM PC, XT, and various CP/M machines. Essentially it consists of two parts:

- An editor that can be used by itself in a manner similar to other word processing packages like WordStar -- to produce a short finished product directly.
- An Advanced Formatting Package that can be used with the editor to allow the user to enter and maintain text of a larger document.

The formatting commands used by the advanced formatter are almost identical to those used by SCRIBE.

Thus, the advantages of The FinalWord are clear. It is not only a good word processing system for many personal computers; it can also be used in a way that is compatible with UTCS' SCRIBE package. Through KERMIT (see *COMPUTERNEWS,* number 210), users of The FinalWord should be able to move documents between a personal computer and UTCS mainframes and format them in either environment with only minimal changes being necessary. Thus, we believe that The FinalWord is an excellent product for those who wish to use a personal computer for text processing, while their documents remain compatible with UTCS mainframes.

The ability to prepare documents that are compatible with UTCS mainframes will be a significant benefit if UTCS' budget proposal to acquire a Xerox 8700 laser printer (and a SCRIBE driver for it) is approved. This is because micro users using The FinalWord (or other "Scribe-Compatible" word processing packages) would be able, with very little effort, to move a document to a UTCS mainframe and format it to produce low cost, "typeset-like" output on the laser printer. We believe that this will make high quality output available to almost everyone.

I would be glad to talk to anyone who might be interested in hearing about The FinalWord or would like to see a demonstration of it. In addition, I would be glad to tell individuals about the plans we have for the product, and for other similar products (such as PerfectWriter). If you are interested, please call me at 978-3995.

John Bradley

COGS and OCP: Concordance Packages

One of the basic tools of text analysis is the Concordance Package. UTCS now has, and supports at a Class B level, two concordance packages: COGS (Concordance Generating System), and OCP (Oxford Concordance Program). Both programs run on the IBM MVS machines, although easy access is also provided from UTCS' DECsystem-10.

Both packages have been found easy to use. COGS, the most heavily used concordance package at U of T, is considered to be easier and cheaper to use than OCP, but not as powerful. OCP, developed at the Oxford University, is one of the standard concordance packages. Documentation for both is available from the Information Office.

COGS is currently undergoing significant development by UTCS — under direction from current users, and the university's Natural Languages Processing Steering Committee — and a new version, with complete documentation, and many new features, is expected to be made available late this summer.

If you would like more information about COGS or OCP, please contact Mr. Lidio Presutti (UTCS' Humanities Computing Specialist). If you need general information about text analysis using computers, you may also wish to start your research by talking to Mr. Presutti (at 978-5130).

John Bradley

Microcomputer News

UTCS currently has Texas Instruments' Personal Computer in the microcomputer lab for evaluation. This machine is not to be confused with TI's inexpensive home computer, the 99/4a, which received so much media coverage when it was discontinued. The TI Personal Computer is a machine with capabilities similar to the IBM-PC. We hope to provide a report on our experience with this machine fairly soon after the evaluation period.

The February IBM-PC Users' Group meeting will be held on Monday, the 20th, at 4:00 p.m. in the Galbraith Building, Room 202. Contact Grant Davis (978-5071) for further information.

For those with Apples (and similar micros), there is a very active users' group which meets several times a month on the St. George Campus. The main February meeting is scheduled for 7:00 p.m. on Wednesday, the 22nd, in the Wallberg Building, Room 116. The next major meeting will be Wednesday, March 21, 7:00 p.m. at the same location. For further information on this group, please contact the president Ed Kammermayer, at 978-3560.

Any users of MSDOS (PCDOS) or CP/M based computers who are considering a purchase of some type of word processing software should read the article on The FinalWord in this issue of *COMPUTER-NEWS.*

Grant Davis

SORT Default Option Changes at UTCS

UTCS has been investigating the default options for the SORT/MERGE program product; these were altered by the installation of the IBM SP 1.3.1 Operating System.

The default value of the **RESINV** parameter is now **0** bytes, lowered from 131,072 bytes. The RESINV parameter determines how much space is reserved for handling data in the calling program. Normally, parameters set by the invoking program take care of this automatically. A large default value for RESINV could be wasteful and expensive in some cases.

The default option EQUALS has been changed to **NOEQUALS.** EQUALS means that records whose sort fields are equal are kept in the same order in the output dataset as in the input dataset. Although this is beneficial to some users, it makes the sort run more slowly and thus increases the cost of the job. Moreover, there are additional constraints when records of variable length are sorted or when a tape sorting technique is necessary. A user may change the option to EQUALS on the SORT/MERGE control statements at any time, but he or she should be aware that this may be more expensive.

Herb Kugel

Volume Utility Replaced at UTCS

The VOLUME utility, which was used to obtain the volume serial number of a catalogued online dataset, failed to work when the IBM 3380 disk drives were installed. UTCS has completely rewritten the utility to reflect the new environment, and the program must now operate somewhat differently from the old utility.

Documentation is being prepared; in the meantime, if you have used VOLUME in the past and wish to use it again now, please contact the Central Advising Office at 978-HELP.

Herb Kugel

Change Committee

Changes To The Academic and Administrative Systems

1. MVS SP 1.3.1 was installed for production on the IBM 4341 computer on November 20, 1983.
2. Installation of PL/I 4.0 took place on the IBM 4341 computer on December 6, 1983.
3. MSG LEVEL=(1,1) is the default for batch jobs on the IBM 3033/N12 as of December 15, 1983.
4. User data on the IBM 4341 system was converted to 3380 disk drives by December 14 and the old CDC disk drives used on this system were removed on December 15.

continued...

Change Committee continued

5. SAS/OR was installed for testing on the IBM 3033/N12 on January 4, 1984.

Changes to UNIX

1. BSD Release 4.2 was installed on machines at CDF, Erindale, and Scarborough sites on December 23, 1983.

Change To Other Systems and Services

1. Updated procedures for requesting test time were implemented on December 12, 1983. See article called "Procedures and Times for Scheduled Downtimes" elsewhere in this issue.
2. Version 2.1 of the Yale Ascii Communications Program was installed on some Series/1 computers on January 9, 1984.

Joan Coutts

Personnel Changes

Thomas Leung has joined the Systems group as Systems Programmer II. Previously Tom worked at the Continental Bank of Canada.

Robin Jung from the Department of Chemistry has joined the Operations group as Computer Operator I.

Welcome to both of you!

Elizabeth Weitmann

Recent Acquisitions in the Computer Library

Badre, A. and Shneiderman, B. eds.
Directions in human/computer interaction.
Norwood, N.J., Ablex Pub. Comp., 1982.

Cakir, A. et al.
Visual display terminals.
New York, Wiley, 1980.

Card, S.K.; Moran, T.P. and Newell, A.
The psychology of human-computer interaction.
Hillsdale, N.J., Lawrence Erlbaum Assoc., 1983.

Chou, Wushow, ed.
Computer communications, v.1: principles.
Englewood Cliffs, N.J., Prentice-Hall, 1983.

Ciarcia, Steve.
Ciarcia's circuit cellar.
Peterborough, N.H., BYTE Books, 1979.

Elsevier Science Pub. Co.
The software catalog: microcomputers (Fall 1983)
New York, Elsevier, 1983.

Ericsson Information Systems AB.
Ergonomic principles in office automation.
Stockholm, 1983.

Frenzel, Louis E., Jr.
The Howard W. Sams crash course in microcomputers.
Indianapolis, Howard W. Sams, 1980.

Goldberg, A. and Robson, D.
Smalltalk-80: the language and its implementation.
Reading, Mass, Addison-Wesley, 1983.

Hofacker, W. and Floegel, E.
The custom APPLE and other mysteries.
Upland, Calif., IJG Inc., 1982.

continued...

Computer Library continued

Jones, William B.
Programming concepts: a second course (with examples in Pascal).
Englewood Cliffs, N.J., Prentice-Hall, 1982.

Kantowitz, B.H. and Sorkin, R.D.
Human factors: understanding people-system relationships.
New York, Wiley, 1983.

Kruglinski, David.
Data base management systems: a guide to microcomputer software.
Berkeley, Cal., Osborne/McGraw-Hill, 1983.

Pugh, Alexander L., III.
DYNAMO user's manual. 6th ed.
Cambridge, Mass., MIT Press, 1983.

Tanenbaum, Andrew S.
Structured computer organization. 2d ed.
Englewood Cliffs, N.J., Prentice-Hall, 1984.

Workshop on Reusability in programming, Newport, R.I., Sept. 1983
Proceedings.

Stephanie Johnston

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** McLennan Labs, 60 St. George St., Room 221
- **Engineering Annex (EAT, EUT, CDF),** 11 King's College Road, Rooms 103, 104, 107, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **New Physics (NPT),** Burton Tower, 60 St. George St., Room 1202
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Room S624, S625, S627, S628, S628A
- **Sidney Smith (AST & ASUT),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 101
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres., Room 012.

Sites	**Hours of Operation**				**Restrictions***	**Advising**
	Mon-Thurs	Fri	Sat	Sun		
AST	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	Research	Rm 2100
ASUT	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	Arranged by DCS
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs/day	24 hrs	24 hrs	24 hrs	Res/Under	No
EAT	24 hrs/day	24 hrs	24 hrs	24 hrs	Research	Rm 106
Educ	9:00-16:30	9:00-16:30	closed	closed	Research**	978-HELP
(outer)	9:00-16:30	9:00-16:30	closed	closed	Research	978-HELP
Erin (2039)	9:00-21:00	9:00-17:00	12:00-17:00	12:00-17:00	Research	Rm 2005
(2045)	9:00-21:00	9:00-17:00	12:00-17:00	12:00-17:00	Undergrads	Rm 2005
EUT	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	Arranged by DCS
NPT	24 hrs/day	24 hrs	24 hrs	24 hrs	Research (Key access)	978-HELP
Robarts	8:30-24:00	8:30-24:00	9:00-17:00	13:00-22:00	BICS	Arranged by DCS
Scar	9:00-24:00	9:00-24:00	10:00-17:00	closed	Research	Rm S624, S626
					Undergrads	No
St.Michael's	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	Arranged by College
Trinity	8:00-23:00	8:00-23:00	8:00-23:00	8:00-23:00	BICS	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	BICS	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses.

Advising Hours

AST	Monday to Friday, 10:00 - 18:00
CAO	Monday to Friday, 10:00 - 18:00
EAT	Monday to Friday, 13:00 - 17:00
Erin, Scar	During normal hours
ASUT/EUT/ROBARTS	Monday to Thursday, 14:00 - 17:00 Friday, 14:00 - 16:00

Services Available

Y=yes, N=no

	BICS	**Keypunch**	**LIBRA**	**PACX**	**Printers**	**Oracle**	**UNIX**
AST	N	Y	N	Y	Y	N	N
ASUT	Y	N	N	N	Y	Y	N
CDF	N	N	N	N	Y	N	Y
EAT	N	Y	N	Y	Y	N	N
EUT	Y	N	Y	N	Y	Y	Y
Educ	N	N	N	Y	N	N	N
Erin	N	N	Y	Y	Y	N	Y
NPT	N	Y	N	Y	Y	N	N
Robarts	Y	N	N	N	Y	Y	N
Scar	N	Y	Y	Y	Y	N	Y
St.Michael's	Y	N	N	N	Y	Y	N
Trinity	Y	N	N	N	Y	N	N
Victoria	Y	N	N	N	Y	N	N

UTCS Systems

3033/N12 Processor

- located in McLennan Physical Laboratories
- provides General Purpose Job Stream, TSO, WYLBUR, APL
- 12 megabytes of memory
- MVS with JES2

3033/U16 Processor

- located in McLennan Physical Laboratories
- provides instructional access using BICS
- 16 megabytes of memory
- UTS (modified UNIX Seventh Edition) under VM/370

4341 Mod II Processor

- located in McLennan Physical Laboratories
- provides administrative IMS/VS, DB/DC, Batch and TSO
- 16 megabytes of memory
- MVS with JES2

DECsystem-10 Model 1090

- located in McLennan Physical Laboratories
- provides General Purpose Time-Sharing
- 512 K - 36 bit words of memory
- TOPS-10 operating system, version 7.01A
- GALAXY queuing, spooling, and batch subsystem, Version 2.0

PDP 11/70 SAS/DPS UNIX

- located in McLennan Physical Laboratories
- provides UNIX text processing & Statistical Analysis Service (Dept. of Statistics)
- 4 megabytes of memory and typesetting
- UNIX Seventh Edition

VAX 11/750

- located in McLennan Physical Laboratories
- provides backup, program testing, and inter-communication relating to student services
- 3 megabytes of memory
- VMS

Computer Disciplines Facility

VAX 11/750 (2 megabytes of memory)
VAX 11/780 (4 megabytes of memory)

- located in Engineering Annex
- provide Computer Science interactive access
- UNIX (Berkeley Unix 4.2BSD)

Communications & Technical Support

- located in Sandford Fleming Building, Fourth Floor
- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains small computer systems on a contract basis or on a cost-per-call basis.
- provides consulting on minicomputers; configures and installs minicomputer systems

Microcomputer Facility

- located in McLennan Physical Laboratories
- provides consulting on microcomputer systems
  Machines available include:
  IBM Personal Computer, APPLE II Plus,
  TRS-80 Model 1, S-100 CP/M System,
  Osborne Micro, plus a variety of
  others on loan from suppppliers
- offers media conversion services

Scarborough College Systems

VAX 11/750 (2 megabytes of memory)

- provides instructional access using LIBRA
- VMS

VAX 11/750 (5 megabytes of memory)

- provides instructional access using UNIX (Berkeley Unix 4.2BSD)

Erindale College Systems

VAX 11/780 (4 megabytes of memory)

- provides instructional access using LIBRA and Research access
- VMS

VAX 11/750 (5 megabytes of memory)

- provides instructional access using UNIX (Berkeley Unix 4.2BSD)

Consulting and Enquiries

External Marketing Consultants	Dr. Bill Fehlner	MP345	6509
	Ihor Prociuk	MP345	6875
Erindale College	Peter Wall	2043	828-5311
Scarborough College	William Barek	S626	284-3173

General Enquiries	Dale Wright	EA206	4990
Account & Access Code Enquiries (U of T)	Agatha Stevens	MP337	8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	7148
Tape Library (Academic Services)	Stella Martin	MP368	7319
Tape Library (Administrative Services)	Miranda Fong	MP368	6693
U of T Computer Library	Stephanie Johnston	EA206	2987

Central Advising	HELP	1200 Baud Interactive Services	3959
System Status Enquiries (DEC)	4318	DATAPAC	4320, 0056
System Status Enquiries (IBM)	7393	Telenet	0302043200056
300 Baud Interactive Services	6200	Tymnet	<backspace> DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	8948
Associate Director	Eugene Siciunas	MP350	5058
Executive Asst., Research & Planning	Wendy Chin	MP350	5568
Senior Budget Analyst	Sheila Brown	MP350	8697

Managers

Accounting & Administration	Wendy Chin (Interim)	MP350	4428
Communications & Technical Support	Norman Housley	SF4306	4967
Operations	Dr. Bob Chambers	MP350	7092
Systems	Bill Lauriston	MP331	3579
User Interface	Don Gibson	MP345	7331

Committees on Computing

UTCS Board	Chairman	Prof. D.M. Nowlan	4984
BICS Steering Committee	Chairman	Prof. R.C. Holt	8726
Committee on Academic Computing	Chairman	Prof. J.Z. Buchwald	7391
Committee on Computer Networks & Telecommunications	Chairman	Mr. A. Heyworth	4936
Committee on Computing Facilities & Services	Chairman	Prof. J.D. Bossons	8626
Computing Disciplines Facility	Chairman	Prof. E.C.R. Hehner	6026
LIBRA Steering Committee	Chairman	Prof. G.S. Graham	6321
Natural Language Processing Steering Committee	Chairman	Prof. I. Lancashire	828-5273
UTCS Users' Committee	Chairman	Prof. J.C. Hurd	3056
	Secretary	Ms. C. Pereira	4463

UTCS Newsletter Subscription Request Form

If you wish to have your name and/or address added, changed or deleted from our Newsletter mailing list, please complete this form.

Please _____ add

_____ change

_____ delete my name and address.

NAME, ADDRESS and TELEPHONE, in full	PREVIOUS NAME and ADDRESS, in full (or include your old mailing label)
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________

____ Check here if you can receive *COMPUTERNEWS* by campus mail.

Comments on this issue of *COMPUTERNEWS*

-- FOLD HERE --------------------------------------

Return to:

COMPUTERNEWS
University of Toronto Computing Services
Room 207
11 King's College Road
Toronto, Ontario
M5S 1A1

UNIVERSITY OF TORONTO
COMPUTING SERVICES
TORONTO, CANADA
M5S 1A1

CAMPUS DELIVERY

University of Toronto Library
Serials Department
Toronto, Ontario
M5S 1A5
University of Toronto